

**Description**

Bulletin 871FM inductive flat pack proximity sensors are self-contained, general purpose, solid state devices designed to sense the presence of ferrous and non-ferrous metal objects without touching them.

These sensors are ideal for applications in which space is limited. They are available in three compact sizes. Connection options include 3-conductor PVC cable or pico quick-disconnect.

Features

- Cable or quick-disconnect styles
- Short circuit protection (DC models)
- Overload protection (DC models)
- Transient noise protection
- False pulse protection
- Reverse polarity protection (DC models)
- CE marked for all applicable directives

Styles

DC 3-wire page 2–152

AC 2-wire page 2–155

Accessories

Quick-Disconnect Cables . . . page 7–1

General Information

Metric/English
Conversion Chart page 10–9

Allen-Bradley Drives

871FM 3-Wire DC

Miniature Flat Pack Style



871FM DC Cable Style
28 x 16 x 11mm
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871FM DC Pico
Quick-Disconnect Style
28 x 16 x 11mm
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871FM DC Cable Style
40 x 26 x 12mm
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871FM DC Pico
Quick-Disconnect Style
40 x 26 x 12mm
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871FM DC Cable Style
25 x 50 x 10mm
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871FM DC Pico
Quick-Disconnect Style
25 x 50 x 10mm
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Specifications

| | 28 x 16 x 11mm | 40 x 26 x 12mm | 25 x 50 x 10mm | 31 x 18 x 10mm |
|------------------------------------|---|----------------|-----------------------|---------------------------------|
| Supply Current | <11mA | <11mA | <8mA | 10mA |
| Load Current | ≤200mA | ≤200mA | ≤200mA | 50mA @ 12V DC 100mA @ 24V DC |
| Leakage Current | <100µA | <100µA | <100µA | |
| Operating Voltage | 10–30V DC | 10–30V DC | 10–24V DC | 10–30V DC |
| Voltage Drop | ≤1.8V | ≤1.8V | ≤2.5V | ≤1V |
| Repeatability | ≤5% | | | |
| Hysteresis | 10% typical | | | |
| False Pulse Protection | Incorporated | | | |
| Transient Noise Protection | Incorporated | | | |
| Reverse Polarity Protection | Incorporated | | | |
| Short Circuit Protection | Incorporated | | | |
| Overload Protection | Incorporated | | | |
| Enclosure | NEMA 4, IP67 (IEC 529) Plastic | | | |
| Connections | Cable: 2m (6.5ft) length 3-conductor PVC Quick-Disconnect: 3-pin pico style | | | |
| LED | Yellow: Output Energized | | Red: Output Energized | |
| Operating Temperature | -25°C to +70°C (-13°F to +158°F) | | | |
| Shock | 30g, 11ms | | | 50g (Approx) |
| Vibration | 55Hz, 1mm amplitude, 3 planes | | | 10–55Hz @ 1–5mm |

Features

- 3-wire operation
- 3-conductor or 3-pin connection
- 10–30V DC
- Normally open or normally closed output
- False pulse, transient noise, reverse polarity, short-circuit and overload protection
- CE marked for all applicable directives

Correction Factors

| Target Material | Correction Factor |
|-----------------|-------------------|
| Steel | 1.0 |
| Stainless Steel | 0.85 |
| Brass | 0.55 |
| Aluminum | 0.50 |
| Copper | 0.45 |

Product Selection

| Sensor Size | Sensing Direction | Nominal Sensing Distance mm (inches) | Shielded | Output Configuration | | Switching Frequency (Hz) | Catalog Numbers | | |
|---|-------------------|---|----------|----------------------|-----|--------------------------|-----------------|-----------------|-----------------|
| | | | | | | | Cable Style | Pico QD Style | |
| 28 x 16 x 11mm | | 2 (0.08) | Y | N.O. | PNP | 600 | 871FM-D2NP11-E2 | 871FM-D2NP11-P3 | |
| | | | | N.C. | PNP | | 871FM-D2CP11-E2 | 871FM-D2CP11-P3 | |
| 40 x 26 x 12mm | Side | 2 (0.08) | Y | N.O. | PNP | 800 | 871FM-D2NP12-E2 | 871FM-D2NP12-P3 | |
| | | | | N.C. | NPN | | 871FM-D2CN12-E2 | — | |
| | | 4 (0.16) | N | N.O. | NPN | | 400 | 871FM-D4NN12-E2 | 871FM-D4NN12-P3 |
| | | | | N.C. | PNP | | | 871FM-D4CN12-E2 | — |
| 25 x 50 x 10mm | Face | 5 (0.20) | Y | N.O. | NPN | 500 | 871FM-D5NN25-E2 | — | |
| | | | | N.C. | PNP | | 871FM-D5NP25-E2 | 871FM-D5NP25-P3 | |
| | | | | N.C. | NPN | | 871FM-D5CN25-E2 | — | |
| | | 8 (0.31) | N | N.O. | NPN | 200 | 871FM-D8NN25-E2 | — | |
| | | | | N.C. | PNP | | 871FM-D8NP25-E2 | 871FM-D8NP25-P3 | |
| | | | | N.C. | PNP | | 871FM-D8CP25-E2 | — | |
| 38 x 18 x 10mm | | 5 (0.20) | | N.O. | PNP | | 871FM-D5NP10-E2 | — | |
| Recommended Standard QD Cordset (-2 = 2m (6.5ft)) | | | | | | | | 889P-F3AB-2 | |

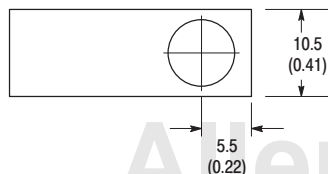
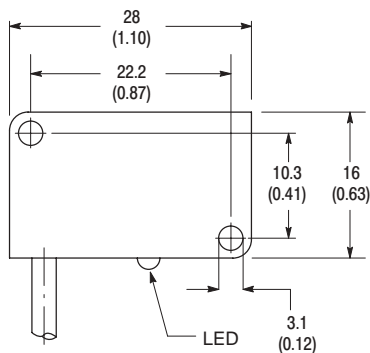
QD Cordsets and Accessories

| Description | Page Number |
|--------------------------|-------------|
| Other Cordsets Available | 7-88 |
| Terminal Chambers | 7-20 |

Dimensions—mm (inches)

Cable & Pico QD Style

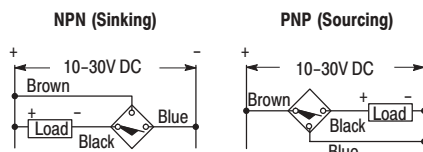
28 x 16 x 11mm



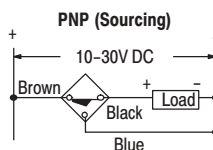
Wiring Diagrams

Cable Style

Normally Open

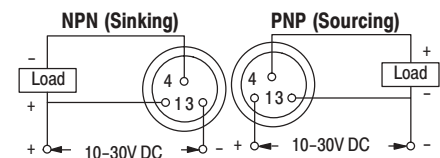


Normally Closed



Pico QD Style

Normally Open or Normally Closed



Allen-Bradley Drives

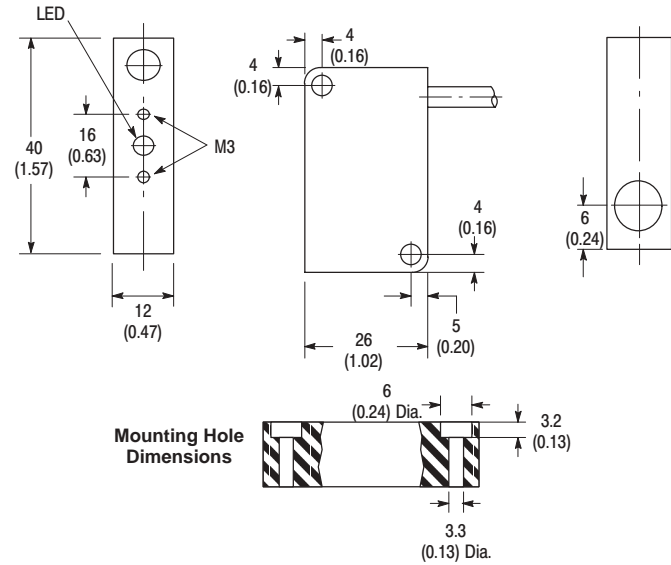
871FM 3-Wire DC

Miniature Flat Pack Style

Dimensions—mm (inches)

Cable & Pico QD Style

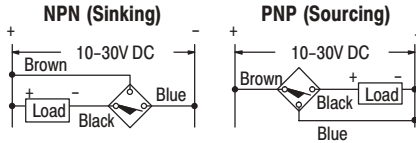
40 x 26 x 12mm



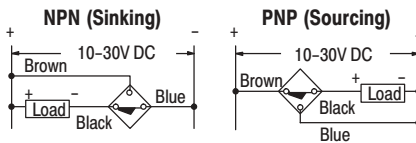
Wiring Diagram

Cable Style

Normally Open

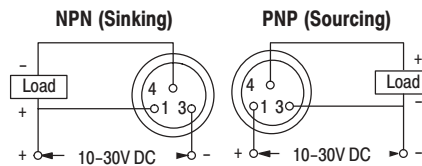


Normally Closed



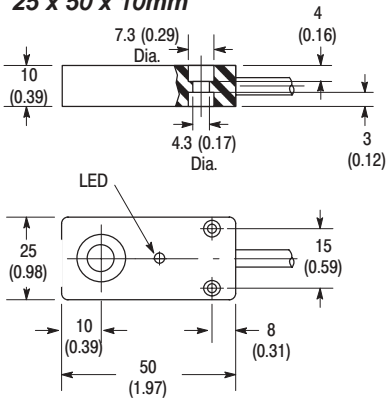
Pico QD Style

Normally Open



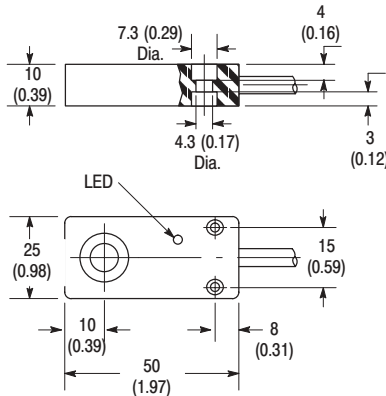
Unshielded Cable & Pico QD & Shielded Pico QD Style

25 x 50 x 10mm



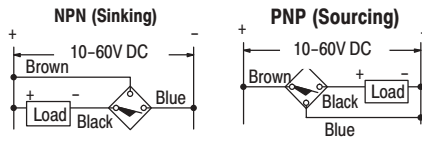
Shielded Cable Style

25 x 50 x 10mm

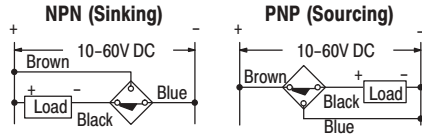


Cable Style

Normally Open

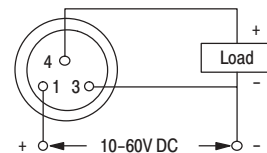


Normally Closed



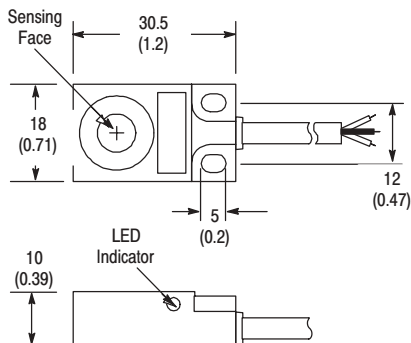
Pico QD Style

PNP (Sourcing)



Cable Style

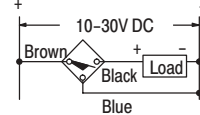
25 x 50 x 10mm



Cable Style

Normally Open

PNP (Sourcing)





871FM AC Cable Style
28 x 16 x 11mm
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871FM AC Cable Style
40 x 26 x 12mm
page 2-156



Specifications

| | 28 x 16 x 11mm | 40 x 26 x 12mm |
|-----------------------------------|---|----------------|
| Load Current | ≤100mA | ≤180mA |
| Minimum Load Current | 4mA | |
| Leakage Current | <2mA | |
| Operating Voltage | 90-250V AC | |
| Voltage Drop | ≤15V | |
| Repeatability | ≤5% | |
| Hysteresis | 10% typical | |
| False Pulse Protection | Incorporated | |
| Transient Noise Protection | Incorporated | |
| Approval | CE marked for all applicable directives | |
| Enclosure | NEMA 4, IP67 (IEC 529) Plastic | |
| Connections | Cable: 2m (6.5ft) length 2-conductor PVC | |
| LED | Orange: Output Energized | |
| Operating Temperature | -25°C to +70°C (-13°F to +158°F) | |
| Shock | 30g, 11ms | |
| Vibration | 55Hz, 1mm amplitude, 3 planes | |

Features

- 2-wire operation
- 2-conductor connection
- 90-250V AC
- Normally open or normally closed output
- False pulse and transient noise protection
- CE marked for all applicable directives

Correction Factors

| Target Material | Correction Factor |
|-----------------|-------------------|
| Steel | 1.0 |
| Stainless Steel | 0.85 |
| Brass | 0.55 |
| Aluminum | 0.50 |
| Copper | 0.45 |

Allen-Bradley Drives

871FM 2-Wire AC

Miniature Flat Pack Style

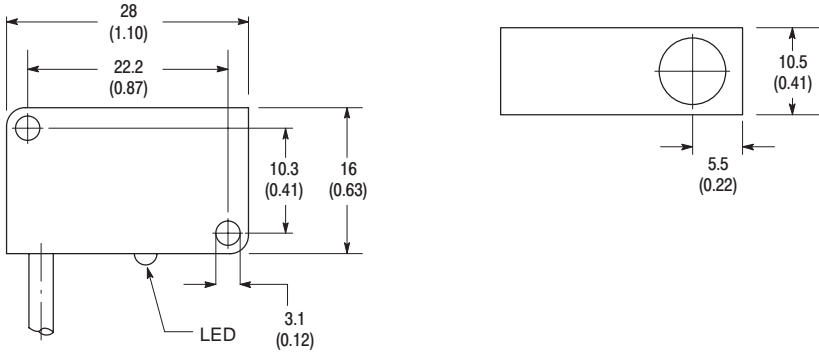
Product Selection

| Sensor Size | Sensing Direction | Nominal Sensing Distance mm (inches) | Shielded | Output Configuration | Switching Frequency (Hz) | Catalog Number Cable Style |
|----------------|-------------------|---|----------|----------------------|--------------------------|-------------------------------|
| 28 x 16 x 11mm | Side | 2 (0.08) | Y | N.O. | 10 | 871FM-A2N11-A2 |
| 40 x 26 x 12mm | | | | N.C. | | 871FM-A2C12-A2 |
| | | 4 (0.16) | N | N.O. | | 871FM-A4N12-A2 |

Dimensions—mm (inches)

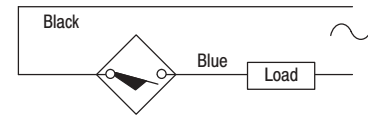
Cable Style

28 x 16 x 11mm



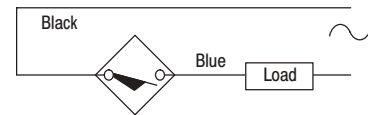
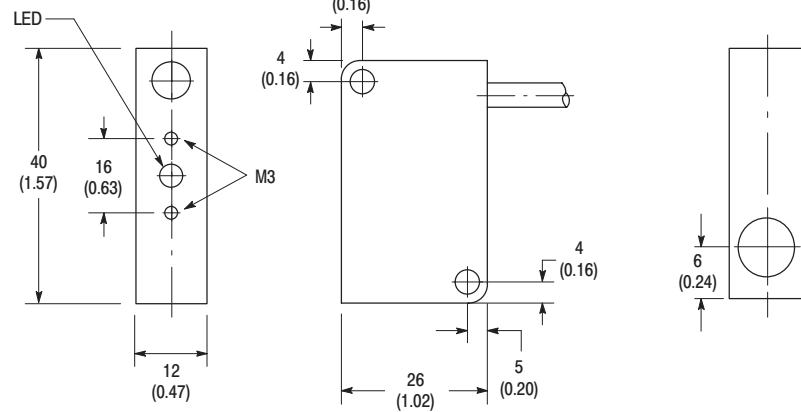
Wiring Diagram

Cable Style



Note: Load can be switched to black wire.

40 x 26 x 12mm



Note: Load can be switched to black wire.

Mounting Hole Dimensions

